PATENT COOPERATION TREATY

PCT

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION See Form PCT/IPEA/416	
2021727PC/ko		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/FI 2004/000173	25-03-2004	25-03-2003
International Patent Classification (IPC) or national classification and IPC		
B60T 7/22, G05D 1/02		
Applicant		
Sandvik Tamrock OY et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☐ *(sent to the applicant and to the International Bureau)* a total of _____ sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))
      _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
20-10-2004	31-05-2005
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer Anna Lundqvist/MN Telephone No. +46 8 782 25 00

Form PCT/IPEA/409 (cover sheet) (January 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/FI 2004/000173

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:

☐ international search (under Rules 12.3 and 23.1(b))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

☒ the international application as originally filed/furnished

☐ the description:

pages _____ as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ the claims:

pages _____ as originally filed/furnished
pages* _____ as amended (together with any statement) under Article 19
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ the drawings:

pages _____ as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/figs _____
☐ the sequence listing *(specify)*: _____
☐ any table(s) related to the sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/FI 2004/000173

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims	1-12	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The application relates to a method and system for stopping an unmanned mine vehicle in a predetermined position.

D1: JP 60255551 A
D2: US 3469443 A1
D3: EP 1405753 A2
D4: JP 63308611 A
D5: RU 2130599 C

Document D1 discloses a brake system to act as a safety device when an unmanned moving vehicle is stopped. If a bumper collides against an obstacle, a lever is turned and a rod is moved down by a piston so that brake wheels are displaced into contact with the ground. The brake wheels are put on driven wheels to rotate in the opposite direction to the driven wheels. An unmanned moving vehicle can thus be stopped quickly. See the abstract.

Document D2 discloses a device for the automatic sensing of stoppage of a wheeled vehicle, comprising means operatively connected with a wheel of said vehicle for sensing near-stop condition of said wheel; means operatively connected with said wheel for sensing a predetermined running speed of said wheel said latter speed being selected to be higher than said near-stop speed and a comparator arranged for receiving outputs from said both sensing means. See the abstract.

Document D3 discloses an automatic brake control system for a vehicle in which brake is automatically applied when the

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

vehicle comes close to an obstacle. See [0019]-[0021].

Document D4 discloses an automatic stopping device for vehicles where a switch is opened when the vehicle is contacted to an obstacle and a bumper is moved, stopping the vehicle body.

Document D5 discloses a vehicle tractive resistance checking method. Retardation method is used for checking on measuring sections separated by intermediate section, length of first measuring section in direction of checking being equal to length of second section. Retardation time is recorded from section borders to moment of stopping and then parameters of resistance to movement are determined basing on relationship between lengths of measuring sections and values of retardation time.

The brake device described in D1 is considered to be the closest prior art. The technique mentioned in the independent claims 1 and 7 differs from the technique in D1 in that the mine vehicle is stopped only after the ratio of speed of the driving power transmission to the speed of the vehicle exceeds a predetermined limit value. Since the detection of the speed of the driving power transmission not is mentioned in any of D1-D5 the cited documents are reconsidered to only represent the general state of the art.

Concerning claim 10, the brake device described in D1 is considered to be the closest prior art. The technique mentioned in claim 10 differs from the technique in D1 in that one determines a tractive resistance when the vehicle is driven against a physical obstacle. The tractive resistance in D5 is determined on special measuring areas for determining aerodynamic drag and rolling resistance of vehicle on dynamic roads. Therefore, document D5 is reconsidered to only represent the general state of the art.

The cited documents represent the general state of the art.
The invention defined in claims 1-12 is not disclosed by any of these documents.
The cited prior art does not give any indication that would lead a person skilled in the art to the claimed method of, or

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of: Box V

the system for, stopping an unmanned mine vehicle in a predetermined position. Therefore, the claimed invention is not obvious to a person skilled in the art.
Accordingly, the invention defined in claims 1-12 is novel and is considered to involve an inventive step. The invention is industrially applicable.